

REMARKS

A substitute specification is presented herewith along with a marked up copy of the original specification. Entry of the substitute specification is respectfully requested.

In the last Office Action the drawings were objected to as being incomplete since the improved portion of the structure, disconnected from the old structure, was not clearly shown in view of the presence of the old structure. In proposed figure 4 three containers C are shown with the middle one being located above a vibration device 32a to set the middle container C in motion. Supporting means 50 are provided for each container C which is placed on and supported by a trolley 50. Sand feeding means are comprised of the hopper 30 for feeding sand into the container C. Positioning means 27 includes first model gripping means 110 which is a central clamp 110 which is also shown on an enlarged scale in the circle to the right for gripping a foam model S. Second container gripping means 112 is comprised of three peripheral clamps 112 two of which are shown in the drawing. The one shown on the left is also shown to an enlarged scale in a circle for gripping the container C. A foam model S has also been shown. All of these elements are the elements called for in independent claim 17.

The drawing depicts the foam model S and the positioning means 27 in two positions, an upper position in which the model S is suspended above the container C and a lower position in which the model S is within the container C similar to the previous showing in figures 2 and 3.

Vertical movement of the positioning means 27 is controlled by the fluid jack 101 shown in figure 3 which moves a bracket-like structure 102 up and down. Suspended to the vertically movable bracket-like structure 102 by legs 108 is a frame 103 having cavities 115. The positioning means 27 includes vertical pins 114b which engage corresponding cavities 115

which are carried by the frame 103 whereby the positioning means rest on the frame 103. This resting position is the upper one shown in proposed figure 4.

The jack 101 is lowered such that in the lower position the positioning means 27 are disengaged from the frame 103. In this position the clamps 110 and 112 grip the model S and the container C as a single piece for vibration as a unit.

In the last Office Action claims 20, 22, 23 and 27 were objected to because of informalities. These claims have been amended to overcome the noted informalities.

In the last Office Action claims 17-28 inclusive were rejected under 35 U.S.C. § 112 as being indefinite due to the use of the phrase capable of in claims 17, 22, 24, 25, 27 and 28. Claim 23 referred to “the arrangement” but there was insufficient antecedent basis for this limitation. Claims 17, 22-24, 25, 27 and 28 have been amended to overcome the noted indefiniteness.

In the last Office Action claims 17-23 inclusive were rejected under 35 U.S.C. § 103(a) as being unpatentable over Edge (US 4,844,142). Claims 24-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Edge in view of McMellon. Reconsideration and allowance of claims 17-28 inclusive are respectfully requested in view of the following remarks.

Claim 17 clearly states that the “positioning means include first model gripping means (clamp 110) connected to said positioning means for gripping said models and second container gripping means (clamp 112) connected to said positioning means for gripping said containers so that, with said first and second gripping means gripping, respectively, the models and the

container, the models and the said container will be substantially connected to each other as a single piece during the vibrational motion generated by said vibration means”.

By virtue of the claimed arrangement, the following advantages are attained:

- (see second-last paragraph of page 10 of the description and the following paragraph bridging pages 10 and 11):

the model is kept firmly in a fixed position with respect to the container C by means of a clamp 110 carried by the hub 109, which in turn is linked by means of the spokes 111 to the clamps 112 that grip the rim of the container C. The descending sand will not therefore be able to cause any undesired displacements of the model S while the container is being filled. This even when the sand comes down in a rush of considerable intensity and/or when the model has surfaces oriented in such a manner as to exert a certain deflection action on the falling sand S (so that the model, by reaction, becomes subject to a certain fluid dynamic thrust).

- (see last paragraph of the page 11 of the description):

The said vibratory motion is applied to the body of the container while the model S is kept in a fixed position with respect to the container C by means of the various parts numbered 103 to 112. This ensures that the said vibratory motion, no matter how great its amplitude or intensity, will not be able either to displace the model S from its correct position or to cause a breakage of its gripping formation T, which in most cases will eventually define the channel through which the casting material will be poured into the container C.

Particularly, the breakage problem is of paramount importance. This problem is solved by the rigid, single-piece type of connection recited in claim 17.

The Edge reference (U.S. Patent No. 4, 844,142)

Throughout the Edge reference a flexible connection is disclosed and taught, not a rigid connection.

Edge discloses a lost foam sand casting apparatus with a set of mold flasks (containers) 15 supported on a turntable with a vibratory means designated 46 in figure 2.

Figure 8 and 9 show the arrangement for supporting the plastic foam pattern P (or model).

As stated at lines 11 to 21 in column 3, the foam pattern P is supported flexibly within each flask at a proper level by a floating pattern carrier ring R comprising an annular inversely disposed channel 25 fitting over the top edge of each flask and having rigid radial arms 25a connected with a pattern-supporting collar 25b by springs 25c which permit rotary and vertical shifting of the pattern P when the flask is being filled with molding sand.

Lines 33-35 of column 4 read as follows: “the pattern P can float with respect to the flow of sand to avoid damage of the fragile pattern”. At column 7, lines 13-21 recite that “because of the ring holder R with springs 25c, the pattern P can twist and move while the layer of sand builds up from the bottom of mold 15. With this initial float which is provided, pattern P will not lend to be damaged as if it were rigidly held in position. As the sand builds up in a mold 15, it will, of course, pack in around the patterns in an even manner because of the vibratory action, and, while the springs 25c will tend to prevent distortion and fracturing the foam pattern P”.

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As apparent, whereas the floating and flexible mounting of the foam patten or model may be beneficial during the sand filling step, this very type of connection suffers from the disadvantages outlined in the introductory part of the description of the present application (as set forth in the above quoted paragraphs drawn from pages 10 and 11). Particularly, the floating, spring-type connection will be detrimental to and allow a breakage of the gripping formation of the foam model or pattern during the subsequent vibrational step, as the foam pattern is allowed to accomplish undesired displacements.

In view of the foregoing amendments and arguments it is believed to be clear that claim 17 and the claims dependent therefrom are clearly not the least bit obvious in view of the teachings of Edge taken either alone or in combination with McMellon. Therefore it is respectfully requested that claims 17-28 inclusive be allowed and the application passed to issue forthwith.

If for any reason the Examiner is unable to allow the application on the next Office Action and feels that an interview would be helpful to resolve any remaining issue, the Examiner is respectfully requested to contact the undersigned attorney for the purpose of arranging such an interview.

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Since the due date fell on a Sunday, the filing of this response on November 18, 2002 is sufficient and filed in a timely manner. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert V. Sloan", written over a horizontal line.

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

A substitute specification is submitted herewith along with a copy of the original specification with changes shown in red. No new matter whatsoever is included in the substitute specification.

IN THE DRAWINGS:

An additional drawing identified as figure 4 is submitted herewith for approval. New figure 4 is basically an explanatory view of the mechanism as shown in the original figures 2 and 3. However the improved portion of the invention is now shown separate from the old structure so as to provide a clearer understanding of the location of the elements according to the new arrangement which accomplishes the vibration of the models and the container as one piece in view of their interconnection to each other during the vibration of the container. New figure 4 clearly shows the model and its relationship to the frame 103 both in the raised position and in a lowered position wherein the model is lowered into the container separated from the frame 103 and positively clamped to the rim of the container to enable the vibrations of the model with the container as a single unit. Upon approval of the proposed drawing a formal drawing will be submitted.

IN THE CLAIMS:

The claims are amended as follows:

--17. (Twice Amended) A container-filling device for lost-foam casting systems, including in a single operational combination:

-supporting means for containers with associated vibration means to set said containers into vibration;

-sand-feeding means for feeding dosed quantities of sand into said containers; and

-positioning means associated with said containers to position foam models into said containers and ~~that are capable of sustaining support~~ said models both while the sand is being fed into the containers by said feeding means and while the containers containing said models are being vibrated by said vibration means;

wherein said positioning means include first model gripping means connected to said positioning means for gripping said models and second container gripping means connected to said positioning means for gripping said containers, so that, with said first and second gripping means gripping, respectively, the models and the container, the models and the said container will be substantially connected to each other as a single piece, during the vibrational motion generated by said vibration means.

20. (Twice Amended) A device in accordance with Claim 17, wherein said second gripping means have associated with them means for bringing them back into their open position.

22. (Twice Amended) A device in accordance with Claim 21, also including also mobile equipment ~~capable of performing a relative movement of lowering and raising~~ movable

between a lowered portion and a raised portion with respect to said containers and wherein said sand-feeding means and said positioning means are carried by said mobile equipment.

23. (Twice Amended) A device in accordance with Claim 22, wherein said moving structure includes a frame that is connected as a single piece with the said mobile equipment and sustains said positioning means, which rest on it; ~~the arrangement being such so~~ that, when the said mobile equipment is in its lowered position relative to said container, said positioning means will become transferred to and rest on the said container, so that the moving structure will be disengaged from both said positioning means and said container.

24. (Twice Amended) A device in accordance with Claim 23, wherein said positioning means and the associated moving structure are provided with complementary centering formations ~~capable of ensuring~~ accurate positioning of said positioning means and the said moving structure relative to the said container.

25. (Amended) A device in accordance with Claim 24, wherein said complementary formations include at least one pin element ~~capable of engaging~~ engagable with a corresponding cavity.

27. (Amended) A device in accordance with Claim 17, further including:

-means for ~~handling said models capable of~~ transferring said models to said positioning means;

-shape recognition means associated with said handling means ~~and capable of~~ for recognizing, among a set of possible models, a particular type of models that, at that particular

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moment, is being carried by the handling means, generating a corresponding type identification signal.

28. (Amended) A device in accordance with Claim 27, further including marking means that are individually associated with said containers and ~~are capable of being read by~~ processing means for reading said marking means and ~~capable of performing operations on said~~ containers, so that said operations performed on each of said containers are specialized in accordance with the type identification signal generated by said recognition means for the particular type of model inserted in said container.--